

Supporting Information Appendix S1
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El Niño oscillations impact anti-predator defenses to alter survival of an herbivorous beetle in a tropical wet forest

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Dates, defense manipulations, sample sizes, predation/parasitism outcomes, survival of *Acromis sparsa*, and mean environmental parameters for the first and second calendar quarters

year	mother	shield	egg (n)	holes (n)	LARVAE n	observed nt_killed (i)	not killed wasp	killenot killed	jug_killed (not killed)	other	/wasp_killnerable lar	ADULTS n	ENSO_Q1	ENSO_Q2	rain_Q1	rain_Q2	̑ (mmol/m ² /r ² /R (mmol/l)	Ta Q1	Ta Q2							
2007	yes	yes	40	1	39	yes	0	39	3	36	7	29	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37					
2007	yes	yes	36	0	36	no	-	-	-	-	-	36	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37					
2007	yes	yes	48	3	45	no	-	-	-	-	-	15	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37					
2007	yes	yes	41	4	36	yes	0	36	0	36	10	26	-	-	1	26	20	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37
2007	yes	yes	46	30	0	no	-	-	-	-	-	0	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37					
2007	yes	yes	26	3	23	no	-	-	-	-	-	15	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37					
2008	yes	yes	39	3	36	yes	0	36	20	16	0	36	-	-	2	16	6	-1.63333	-0.7	40	293	31.7548	23.3262	25.47	26.2	
2008	yes	yes	47	1	46	no	-	-	-	-	-	1	40	-1.63333	-0.7	40	293	31.7548	23.3262	25.47	26.2					
2008	yes	yes	51	32	0	no	-	-	-	-	-	0	-1.63333	-0.7	40	293	31.7548	23.3262	25.47	26.2						
2008	yes	yes	48	0	48	yes	0	48	0	48	26	22	-	-	6	22	14	-1.63333	-0.7	40	293	31.7548	23.3262	25.47	26.2	
2008	yes	yes	46	30	0	no	-	-	-	-	-	0	-1.63333	-0.7	40	293	31.7548	23.3262	25.47	26.2						
2008	yes	yes	42	0	42	no	-	-	-	-	-	36	-1.63333	-0.7	40	293	31.7548	23.3262	25.47	26.2						
2008	yes	yes	46	0	46	no	-	-	-	-	-	30	-1.63333	-0.7	40	293	31.7548	23.3262	25.47	26.2						
2009	yes	yes	37	0	37	yes	11	21	0	37	0	37	-	-	0	21	21	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37	
2009	yes	yes	41	0	41	no	-	-	-	-	-	40	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37						
2009	yes	yes	41	3	38	no	-	-	-	-	-	8	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37						
2009	yes	yes	40	0	40	yes	0	40	0	40	14	26	-	-	0	26	26	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37	
2009	yes	yes	48	8	40	no	-	-	-	-	-	5	17	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37					
2009	yes	yes	40	2	38	no	-	-	-	-	-	36	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37						
2009	yes	yes	48	2	46	yes	0	46	0	46	21	25	10 katydid	-	0	15	6	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37	
2009	yes	yes	46	3	43	no	-	-	-	-	-	19	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37						
2009	yes	yes	39	6	30	no	-	-	-	-	-	20	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37						
2009	yes	yes	41	2	39	no	-	-	-	-	-	29	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37						
2009	yes	yes	38	13	25	yes	0	25	1	24	0	25	-	-	0	24	24	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37	
2009	yes	yes	41	2	39	yes	27	12	0	39	0	39	-	-	0	12	12	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37	
2009	yes	yes	44	0	44	no	-	-	-	-	-	32	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37						
2009	yes	yes	28	2	26	yes	0	26	22	4	0	26	-	-	0	4	3	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37	
2010	yes	yes	40	18	22	yes	0	22	0	22	8	14	-	-	0	14	14	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33	
2010	yes	yes	44	2	44	yes	0	44	25	19	0	44	-	-	0	19	15	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33	
2010	yes	yes	42	7	33	no	0	33	24	9	0	33	-	-	0	9	8	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33	
2010	yes	yes	35	4	31	yes	-	-	-	-	-	5	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33						
2010	yes	yes	42	6	35	yes	21	14	0	14	0	35	-	-	0	14	8	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33	
2010	yes	yes	37	0	37	yes	0	37	0	37	16	21	-	-	0	21	21	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33	
2010	yes	yes	46	30	0	no	-	-	-	-	-	0	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33						
2011	yes	yes	36	12	24	yes	0	0	0	0	5	19	0	-	2	19	17	-1.29667	-0.45667	115	507	32.9277	29.8938	25.53	26.2	
2011	yes	yes	41	4	37	yes	0	0	0	0	12	25	0	-	2	25	23	-1.29667	-0.45667	115	507	32.9277	29.8938	25.53	26.2	
2011	yes	yes	43	8	33	no	20	13	0	0	0	0	0	-	3	13	10	-1.29667	-0.45667	115	507	32.9277	29.8938	25.53	26.2	
2011	yes	yes	46	9	36	yes	0	0	0	0	9	27	0	-	4	27	23	-1.29667	-0.45667	115	507	32.9277	29.8938	25.53	26.2	
2011	yes	yes	38	7	31	yes	0	0	20	11	0	0	0	-	0	11	11	-1.29667	-0.45667	115	507	32.9277	29.8938	25.53	26.2	
2011	yes	yes	43	5	38	yes	22	8	0	0	0	0	0	-	2	8	6	-1.29667	-0.45667	115	507	32.9277	29.8938	25.53	26.2	
2007	no	yes	36	4	32	yes	32	0	0	0	0	0	0	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2007	no	yes	47	2	45	yes	27	0	18	0	0	0	0	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2007	no	yes	40	7	29	yes	0	0	0	22	7	0	0	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2007	no	yes	42	1	41	yes	41	0	0	0	0	0	0	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2007	no	yes	37	15	20	yes	0	20	0	0	0	0	0	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2007	no	yes	36	0	36	yes	36	0	0	0	0	0	0	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2007	no	yes	32	0	32	yes	0	32	0	0	0	0	0	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2007	no	yes	39	0	39	yes	39	0	0	0	0	0	0	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2008	no	yes	40	4	36	yes	0	26	10	0	0	0	0	-1.63333	-0.7	40	293	31.7548	23.3262	25.47	26.2					
2008	no	yes	37	5	27	yes	0	0	27	0	0	0	0	-1.63333	-0.7	40	293	31.7548	23.3262	25.47	26.2					
2009	no	yes	48	6	38	yes	0	14	24	24	0	0	0	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37					
2009	no	yes	40	5	35	yes	0	17	18	18	0	0	0	2	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37				
2009	no	yes	46	6	38	yes	23	15	0	0	0	0	0	-0.75333	0.12667	73	560	29.4258	29.9043	25.57	26.37					
2010	no	yes	36	10	23	yes	15	8	0	0	0	8	0	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33					
2010	no	yes	38	9	25	yes	17	7	0	0	0	7	0	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33					
2010	no	yes	38	0	38	yes	0	0	30	8	0	8	0	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33					
2010	no	yes	44	6	34	yes	34	0	0	0	0	0	0	1.26667	-0.07667	25	592	34.5508	26.8987	27.93	28.33					
2011	no	yes	41	3	35	no	-	-	-	-	-	6	24	5	-1.29667	-0.45667	115	507	32.9277	29.8938	25.53	26.2				
2011	no	yes	39	6	33	yes	0	9	24	0	0	6	24	5	-1.29667	-0.45667	115	507	32.9277	29.8938	25.53	26.2				
2011	no	yes	48	5	43	yes	0	13	30	0	0	2	30	11	-1.29667	-0.45667	115	507	32.9277	29.8938	25.53	26.2				
2007	yes	no	40	10	30	no	-	-	-	-	-	8	22	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2007	yes	no	47	4	43	yes	0	0	17	26	20	26	6	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2007	yes	no	43	3	40	yes	0	0	18	22	10	22	10	0.24667	-0.12667	28	28	956	39.6955	30.2461	26.37	26.37				
2008	yes	no	43	0	43	yes	0	0	8	30	13	30	17	-1.63333	-0.7	40	293	31.7548	23.3262	25.47	26.2					
2008	yes	no	41	6	32	yes	0	0																		